notes

1 Foundations

1.1 The Role of Algorithms in Computing

1.1.1 Algorithms

1.1.2 Algorithms as a technology

1.1.3 Problems

1.2 Getting Started

1.2.1 Insertion sort

Input:A sequence of n numbers $(a_1, a_2, \cdots, a_n)$.

Output:A permutation $(a'_1, a'_2, \cdots, a'_n)$ of the input sequence such that $a'_1 \leq a'_2 \leq \cdots \leq a'_n$.

1.2.2 Analyzing algorithms

1.2.3 Designing algorithms

1.2.4 Problems

INSERTION-SORT(A)

```
1  for j ← 2 to length[A]
2       do key ← A[j]
3          ▷ Insert A[j] into the sorted sequence A[1..j − 1].
4          i ← j − 1
5          while i > 0 and A[i] > key
6               do A[i + 1] ← A[i]
7                  i ← i − 1
8          A[i + 1] ← key
```